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ABSTRACT

Over 300 verbal and behavioral associations between television and real life were recorded by observing three preschool children for three years and gathering supplementary information from five other children. The children's associations to real life experience made during television viewing occurred consistently earlier than associations to television from the context of daily experience. Regardless of age and amount of television viewed, children consistently used real life as the background against which television was compared. Of the 11 types of associations that were documented, some were found to occur regardless of age, including children commenting on the similarities/differences between television and real life, their requests for televised objects, and their imitation of television characters. Two-year-old children did not perceive the two worlds as separate, and were confused as to the nature of the boundary between the two realms. When the children were four years old, they demonstrated a clearer understanding of the boundary, but they also tended to be overly rigid about the unreality of televised material. At five years of age, the children understood the principal kinds of relationships between television and the rest of their experience, but they were still insensitive to certain connections. (Author/RL)

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H A R V A R D P R O J E C T Z E R O

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Technical Report No. 11

HOW PRESCHOOLERS EXPLORE THE RELATIONSHIP BETWEEN TELEVISION AND THE REAL WORLD

by

Leona M. Jaglom, Paula G. Wilder, and Anitra Fagre

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How Preschoolers Explore the Relationship Between Television and the Real World

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Harvard Project Zero

Introduction

The world presented on television is a very vast, complex, and often contradictory one, encompassing not only information about every facet of the real world, but information which goes beyond this world into the real or the fantastic. Young children watch thousands of hours of television, and are exposed to an enormous amount of information. It might seem that these children will be totally confused by such a diet, and yet, by the time they reach elementary school, they can distinguish, with surprising reliability between numerous types of television material (Morison, McCarthy, and Gardner, in press). Unless one assumes that very young children are already fully equipped to make these distinctions -- an assumption which is in any case false -- it seems clear that a principal challenge confronting the preschool child is the development of methods to sort out the confusion.

In this paper, the question of how this sorting process develops is examined. In particular, the discussion which follows focusses on how children relate what they see on television to the real world, whether they also relate their daily experiences to events viewed on television, and how they distinguish among the various messages and situations conveyed on television.

The television medium differs from most media encountered by children in that it effectively cannot be manipulated by them. A piece of glass and a box separate the child from the ever-changing images. Aside from channel and volume knobs, the child has no direct contact with or control over the medium content. Particularly interesting or confusing characters, objects or events cannot be reexamined unless the producer has chosen to repeat them. Children have no control over scheduling or pace, and their only means of acquiring more information about televised events is through self-questioning or through communication with others.

For these reasons, children's comments and questions about television assume special import. These remarks can generate an understanding of the position television holds in a child's life. They can help to determine whether real life is always the "ground" against which television is compared, or whether, as children watch more and more television, the medium itself becomes the reference point against which real life experiences are compared. Their comments can reveal whether the child relates television experiences to his own, how he perceives similarities and differences between the two worlds, and to what extent knowledge gained in one sphere influences perceptions of or behavior towards the other.

Through children's comments, one can learn how the boundary between the two worlds is established and whether their perceptions of this boundary change with age. Specifically, one can determine whether at times the boundary is perceived as rigid and the two worlds as completely separate, whether at other times it is perceived as totally diffuse or permeable and the two worlds identical, or whether the child perceives the boundary as semi-permeable -- sometimes diffuse, sometimes rigid, and sometimes midway between the two. Finally, we can receive insights into how children achieve various adult understandings. For example, that television can contain almost anything experienced in real life, that it can contain accurate representations of real life as well as fantastic distortions, that information gained on television may be directly applicable to real life situations, may be partially applicable, or may be completely irrelevant or even contradictory to real life experience.

This set of issues has been addressed in a longitudinal study of early television competence. The study focussed on the associations children made between television and the real world, and between their daily experiences and television content. These associations served to map children's perceptions of the boundary between the two realms. It focussed on a small sample of subjects who were followed intensively over a three-year period. This design -- involving an intensive examination of a small number of subjects -- models Piaget's study of the sensori-motor period (1952, 1954) and Roger Brown's study of the origins of language (1973). Though each of these studies involved only three subjects, they have produced highly robust findings.

Method

Three[1] children participated in a three-year longitudinal study extending from the time they were 2 to 5 years of age. Subjects were seen at bi-weekly home visits lasting one-and-a-half to two hours. The experimenter engaged the children in a variety of television-related tasks and observed approximately one half-hour of children's natural television viewing. Tasks were designed to probe children's knowledge and understanding of television content. For example, a guessing game was played in which the child and experimenter alternated hiding television characters behind their backs, providing one another with clues regarding the characters' attributes, and guessing which character was hidden. Another task involved sorting pictures of various types of television fare into piles of cartoons, news shows, commercials, children's shows, "real" shows or "pretend" shows. In addition, on a quarterly basis, subjects viewed experimental videotapes featuring various types of television fare. Verbatim transcripts were made of all sessions, and subjects' parents kept diaries of all television-relevant comments and experiences.

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[1] The sample originally consisted of four subjects, but one was sufficiently unusual and laggard in her overall development as well as in her television viewing behavior, that her data has been excluded from the analysis.

Additionally, five other children drawn from the Project Zero Early Symbolization Project sample, were followed on a quarterly basis over a period of two years from age 3 to 5 years. These subjects were also shown the experimental videotapes and their parents asked to report relevant television information at the time of these sessions. The data obtained from these subjects were used to supplement the findings from the three primary subjects.

All instances in which television content was related to real life experience and all instances where real life experience was related to television content were extracted from transcripts of home visits and videotape sessions as well as from parent diaries. The majority of associations or comments were made spontaneously, while some were prompted by the parent's or the experimenter's questions.

Analysis

Associations were classified in terms of their directionality. Associations made while viewing, from the television to the real world, were labelled Television-Real Life (hereafter TV-RL) Associations. Associations made in the context of daily experience and related to content viewed on television, were labelled Real Life-Television (hereafter RL-TV) Associations. It should be noted that TV-RL associations were observed and recorded by both parents and the experimenter, while RL-TV associations were recorded primarily by parents. Analysis then consisted of scrutinizing the data and grouping associations into descriptive categories which adequately characterized their various qualities. Associations were then classified at six month intervals in terms of the descriptive categories itemized below. As will be seen, some categories, such as noticing Similarities or Imitation, lend themselves to nonverbal associations, while others, such as Statements of Representation or Differences, are necessarily verbal.

Types of Associations

The associations confirm that children are actively concerned with the relationship between, or the nature of the boundary dividing the televised and the "real" worlds. They investigate similarities between the two (perceiving the boundary as permeable), the differences between the two (perceiving the boundary as impermeable), and the occasions on which there exist both similarities and differences (a boundary which may be thought of as both permeable and impermeable between television and the world and their daily experience). In addition, there are times when children magnify in their minds the reality status of content on television in order to make it seem more similar to their own experience and perhaps easier to assimilate. They even go so far as to attempt to act upon events occurring within a television set, overlooking the fact that there is an actual glass boundary separating the two worlds. At other times, they perceive this boundary as so complete, that they ignore all similarities, deny them even when they are readily apparent, and dismiss any possibility of transfer between the two realms.

Type I: Investigating Similarities -- Variations on a Diffuse Boundary

In the course of investigating similarities bewteen the real and televised worlds, children made several types of associations. All of these types indicate the perception of a correspondence between the two spheres. Each of the types, however, represents a different conception of the diffuse or permeable boundary between the two.

A. Over-generalization. An association was scored as an Over-generalization if it indicated that the child perceived no boundary between television and real life. In making this type of association, children assume that objects or events viewed on television are identical to those experienced in real life and vice versa, even when there is little apparent similarity between the two objects or events. At times the similarities they identify are over-extensions of the content's original correspondence. Children also attempt, at times, to act upon characters or events taking place within the television set or assume that television content can intrude into their own experience. They are fearful of television characters coming into their rooms. They do not seem to consider the two worlds as separate, and self-contained but rather as merging into one.

Example 1: TV-RL -- Child sees a broken egg on TV and wants to get a paper towel to clean it up. (Kathy, 2:1)

Example 2: RL-TV -- Child is afraid that the Abominable Snowman is in his room. (Donny, 2:4)

B. Statement of Similarity. This type of association consists of simply linking an object, character, or event in one world to a similar one in the other. The link is not necessarily made verbally. Children sometimes notice a similarity and demonstrate it by actually getting the similar object. (See Example 1). Here, the boundary is perceived as diffuse or permeable. The children notice actual similarities between the two worlds rather than over-generalizing their experiences to make them seem identical.

Example 1: TV-RL -- Child sees Sesame Street character, Grover on TV and goes to get his Grover puppet. (Donny, 2:4)

Example 2: RL-TV -- Child sees a friend with a rubber duck and says "Rubber Ducky, just like Ernie's." (Kathy, 3:10)

C. Application. In cases of Application, similarities between the two worlds are not only recognized, but are supplemented with information gained from one realm which is actively applied to the other. To be scored as an Application, an association had to apply knowledge gained from television or real life to a situation recognized as similar, but experienced in the alternate world.

Example 1: TV-RL -- Child is frightened of an airplane in real life and his mother tells him not to worry. He later sees a plane on TV and says "I don't worry, plane don't hurt." (Donny, 2:4)

Example 2: RL-TV -- Child eating dinner says "See, my milk is between my knife and fork" (taken from Sesame Street "between" lesson seen that day). (Kathy, 3:4)

D. Imitation. Imitation involves a realization that events in the two worlds are not only similar, but that events occurring in one can be reproduced in the other. The child can make them similar by bringing a televised action, or event into the real world through imitation. In this case, the associations are necessarily unidirectional -- children imitate in real life what they see on television, while they can not imitate on television what they experience in real life. We did not eliminate RL-TV associations of this type, however, because many instances did occur in which the imitation took place in a real life situation, out of the context of television viewing. Instances in which children imitated while watching television were categorized as TV-RL associations.

Example 1: TV-RL -- Child saw a distraught lady on a soap opera and imitated her gestures. (Kathy, 2:2)

Example 2: RL-TV -- Child asks for a cough drop and says, "Aspirin and Sucrets, a real effective pain reliever." (Donny, 4:5)

E. Identification. Identification is similar to Imitation in that the child may begin by imitating a television character. But to be labelled an Identification, in addition to simply imitating gestures or actions, the child has to build and improvise the role of the character. She would link herself to the character either by experimenting with the role, by stating that she would like to be like the character in some way, or by stating that she would like to be friends with the character. Like the Imitation category, these associations were uni-directional.

Example 1: TV-RL -- Child sees a boy on TV yelling at another person and says to his mother, "The boy yelled at him and when I get big, I'm going to yell at you." (John, 2:7)

Example 2: RL-TV -- Child wakes up in the morning and acts out scene from the Bionic man. (Donny, 4:2)

F. Requests. In requesting televised events or objects, children demonstrate an awareness that objects viewed on television are available in the real world. By asking for something displayed on television, they might actually secure it, eat it, play with it in real life. The boundary between the two worlds is perceived as permeable, and, as with imitation, through a simple request on the child's part, he can bring objects into his own world. Here, the child attempts to control the transfer of material across the diffuse boundary. This type of association is also uni-directional -- children ask for televised objects in order to bring them into their world -- they do not, of course, ask for real objects to be taken into the television world. Here again, however, we did distinguish between TV-RL and RL-TV associations by determining whether the TV was on at the time of the request or whether the request occurred without the TV to stimulate it.

Example 1: TV-RL -- Child sees an ad for a store and asks to go there and buy some things. (Kathy, 2:10)

Example 2: RL-TV -- Child asks for a Baggie for her trucks, her Mother gives her a Glad Bag, and the child says "No a Baggie, I watch it every day." (Kathy, 2:9)

G. Statement of Representation. This type of association also involves recognition of the existence of objects in both worlds, but here Imitation or Requests are unnecessary. Moreover, children recognize that some types of television programming actually represent or provide information about real world events. Children realize that this information may be used in practical ways to influence behavior. For example, the weather report may determine what a person will wear that day, an ad for the circus may indicate when and where one should buy tickets, or the News may confirm that there was a fire in your town when you saw the fire truck going to it that same day. Not only is the boundary permeable, but what happens in the real world during the day may affect what appears on television that evening, and what is viewed on television may affect what a person actually knows or does about his real surroundings.

Example 1: TV-RL -- Child sees a portion of the News in which a fire is being described and realizes that it is the same fire which everyone at school had been discussing that day. (Donny, 4:5)

Example 2: RL-TV -- Child tells her mother that it is going to rain, that she heard it on TV and that it scares her. (Kathy, 3:11)

Type II: Investigating Differences: Variations on a Rigid Boundary

A. Statement of Differences. This type of association involves recognizing that differences can exist between things viewed on television and real world experiences. In fact, some characters or situations exist or occur only in the television world and cannot enter or be reproduced in the real world. When making this type of statement, children perceive a rigid boundary between television and real life. They indicate that the two worlds are separate, that they do not merge.

Example 1: TV-RL -- Child sees King Kong on TV; says "That's King Kong, he's a monster, he's a gorilla, that's just make-believe." (Donny, 2:4)

Example 2: RL-TV -- Child is holding cookies in her lap; TV is not on; child says "Cookie Monster can't get these because Sesame Street is on TV so he can't come out of the TV and get them." (Kathy, 4:3)

B. Questions about Differences. When children ask questions about television content, it is usually to determine television's relationship to the real world. Most of the questions seem to arise from television situations which are not within the child's daily experience. Children

already seem aware that the boundary between the two worlds essentially is impervious at these times, but something about the situation is novel enough to make them uncertain. Perhaps the child has not had the necessary real life experience against which to compare the televised situation. A question to an adult is thus a means of resolving the confusion.

Example 1: TV-RL -- Child watches the Peanuts Halloween special and asks his mother whether the Great Pumpkin really brings presents and whether they (child's family) have a pumpkin patch. (Donny, 4:2)

Example 2: TV-RL -- Child asks her mother why it is night on TV and day in real life. Children also ask similar questions about snow and rain viewed on TV when not in real life simultaneously. (Kathy, 4:1)

Example 3: RL-TV -- Child sees a stuffed bear and says to her mother, "Polar bears have this many feet? I never saw that on Sesame Street." (Kathy, 3:4)

C. Combination of Similarities and Differences. Children making this type of association recognize that similar situations or characters exist in both spheres, but simultaneously note a certain discrepany between the televised content and its real world counterpart. The boundary here is perceived as diffuse or permeable for a portion of the content -- similar situations or characters do exist in both worlds -- but rigid or impenetrable for the remaining portion -- these situations or characters exist in a different form or with differing (often more realistic) characteristics.

Example 1: Child sees a school on TV, recognizes it as similar to his own, but says that he doesn't sit on a bench as in this school. Another child says, in response to the same TV content, that his school has things to play with and this one does not. (Donny, 4:1, John, 4:5)

Example 2: Child sees Kermit the Frog on TV and says "I have one (a puppet), but mine doesn't talk". (Kathy, 4:5)

Example 3: Child watching Donald Duck on TV is reminded of his family's ducks, but says that theirs are real and that they are also a different color. (John, 4:10)

D. Over-differentiation. Here, children draw an absolutely impenetrable boundary between the televised and real worlds. Nothing viewed on television is perceived as real or as existing in reality. Children overgeneralize to the extent that even when similarities are recognized for specific content, they are dismissed because the content belongs to the television world.

Example 1: TV-RL -- Child recognizes that person on TV has same sneakers as his father's, but goes on to say that they are not really the same because the other person's sneakers are on TV. (Donny, 4:9)

Example 2: RL-TV -- Child who has recently seen himself on TV said that he cannot be on TV and never has been. (John, 4:11)

Example 3: RL-TV -- Child talks about seeing people at a picnic dressed up as Wonderwoman and Superman. Child says that these were real people in costumes, but when asked whether this is the case when they are on TV as well, the child says "No, they're not real when they're on TV." (John, 4:11)

Results

A total of 207 TV-RL and 95 RL-TV associations were recorded for the three-year period under examination. In reporting of results, each association category will be examined in terms of the age at which it occurred most frequently as a TV-RL association and the age at which it occurred most frequently as a RL-TV association. These results will then be examined in terms of developmental trends and differences between trends in TV-RL and RL-TV associations.

Type I: Investigating Similarities

A. Over-generalizations. During their third year, children often over-extend the similarities between the television and real worlds. TV-RL Over-generalizations occurred primarily (72%) during the period from age 2:0 to age 2:11, and 59% of all RL-TV associations occurred during this same period. The drop in RL-TV Over-generalizations after age 3:0 was not as sharp as that of TV-RL Over-generalizations. For RL-TV, 12% occurred between 3:0 and 3:11, and 29% between 4:0 and 4:11, while for TV-RL, 12% occurred between 3:0 and 3:11 and 16% between 4:0 and 4:11.

B. Statement of Similarity. Within the television-viewing context, statements regarding the parallels between the televised and real worlds were made quite consistently throughout the three year period (27% from 2-3 years, 31% from 3-4 years, 42% from 4-5 years). Outside the television-viewing context, children commented on the similarities between the two worlds during the 2:0 to 3:11 period (82%) while these comments dropped off during the 4:0 to 4:11 period (18%).

C. Application. From age 2:0 to age 3:11, children applied information from one realm to the other regardless of the context, (TV-RL: 90%, RL-TV: 88%). Application decreased abruptly in frequency from age 4:0 to 4:11 (TV-RL: 10%, RL-TV: 12%).

D. Requests. Requests for televised objects were made within the TV-viewing context consistently across all three years (37%-30%-33%). Without television as an immediate stimulus, however, Requests did not occur with frequency until the year 4:0 to 4:11, during which time 75% of all RL-TV Requests were made.

E. Imitation. Children reproduced televised actions or events while watching television throughout the 2:0 to 4:11 period (39%-26%-35%). In the context of daily experience, however, without the television as a stimulus, children imitated television characters and events primarily (73%) from age 3:0 on.

F. Identification. Identification with television characters manifested itself through TV-RL associations primarily from age 2:0 to 2:11 (87.5%). After age 2:11, Identification dropped during television viewing. Outside of this context, on the other hand, the majority of these types of associations (85%) occurred from age 3:0 to age 4:11. Only 15% occurred during the 2:0 to 2:11 period.

G. Statement of Representation. This type of association occurred as a TV-RL association primarily (65%) during the children's fifth year (ages 4:0 to 4:11). Only 7% occurred from 2 to 3 years, and only 28% between 3 and 4 years. As a RL-TV association, this type arose only once and this was at age 3:11.

Type II: Investigating Differences

A. Statement of Differences. Children noticed and commented upon the lack of correspondence bewteen televised situations and real life situations while viewing television throughout the three year period (45%-25%-31%). Children rarely commented upon the differences in the opposite direction. The three instances in which children did comment on differences between a real life situation and one previously viewed on television occurred between the ages of 4 and 4 1/2 years.

B. Questions about Differences. Children raised questions regarding the correspondence between televised material and real life experience (TV-RL associations) relatively consistently from 2:0 to 4:11 (24%-35%-41%). This type of questioning occurred only once outside the TV-viewing context and this was at age 3:4.

C. Similarities and Differences. Associations which combined comments on the correspondence between the two realms and the differences between them occurred only as TV-RL associations and all of them (eight total, or 4% of all TV-RL associations) occurred during the 4:0 to 4:11 year. Children were not reported to comment upon the similarities and differences between real life experince and television content -- they did not make the comparision in the RL-TV direction.

D. Over-differentiation. Associations indicating the perception of an absolutely impervious boundary between the two realms were made both as TV-RL and as RL-TV associations only after the child turned 4 1/2 years old.

Developmental Trends

A. Age 2 Years to 3 Years.

1. TV-Real Life Associations. The results described above indicate that by the age of 2, children begin making the majority of the types of TV-RL associations. While watching television, such children comment upon the similarities between what they view on television and what they experience in real life, imitate television characters and situations, and comment upon and ask questions about the differences between the two. They acknowledge parallels between parts of the two worlds as well as the lack of correspondence between other parts. In addition, children this young actually forge connections between the two worlds. They go beyond simple observations of perceptual similarities or differences to appropriately apply information from one world to the other, to make requests for televised objects, and to identify with TV characters. Along with these seemingly sophisticated types of associations made by age 2, children also make Over-generalizations. While exploring the similarities and differences between the two realms, they often perceive parallels between them where parallels do not actually exist. They take the smallest similarity to indicate that the two worlds are identical. This confusion is apparent primarily between the ages of 2:0 and 2:11, at which point over-generalizing appeared to diminish greatly.

2. Real Life-TV Associations. The results indicate that children do not, in general, make as many RL-TV associations as they do TV-RL associations. The ratio of TV-RL to RL-TV is about 2 to 1. In addition, the results show that the various types of associations do not necessarily occur most frequently at the same ages in both contexts. Between the ages of 2 and 3 years, for example, children make only three out of eleven types of RL-TV associations while they make all BUT three types of TV-RL associations during this first year of observation. Children make RL-TV Over-generalizations during this period, and as with TV-RL, this type dropped off, though not as sharply, after the age of 3 years. Statements regarding the similarities between objects in the two realms were made during this period, and children went beyond simple statements of correspondence to import information from televised into real life situations. These last two types of associations did not drop off at age 3:0, but rather continued to be made frequently through the next year, or until age 4:0.

B. Age 3 Years to 4 Years.

1. TV-RL Associations. The results indicate that none of the TV-RL types of associations appeared for the first time during this year. Children did continue to make the types of associations discussed above which emerged at age 2:0, although, as already mentioned, Over-generalization declines greatly.

2. RL-TV Associations. The major change at age 3:0 for RL-TV associations was an upsurge in Imitation and Identification. Although children did imitate television characters or songs before this, only at this age did they do so frequently without the television serving as stimulus. In addition, the one RL-TV Statement of Representation was made during this period, and the one Question about Differences between the two spheres occurred as well.

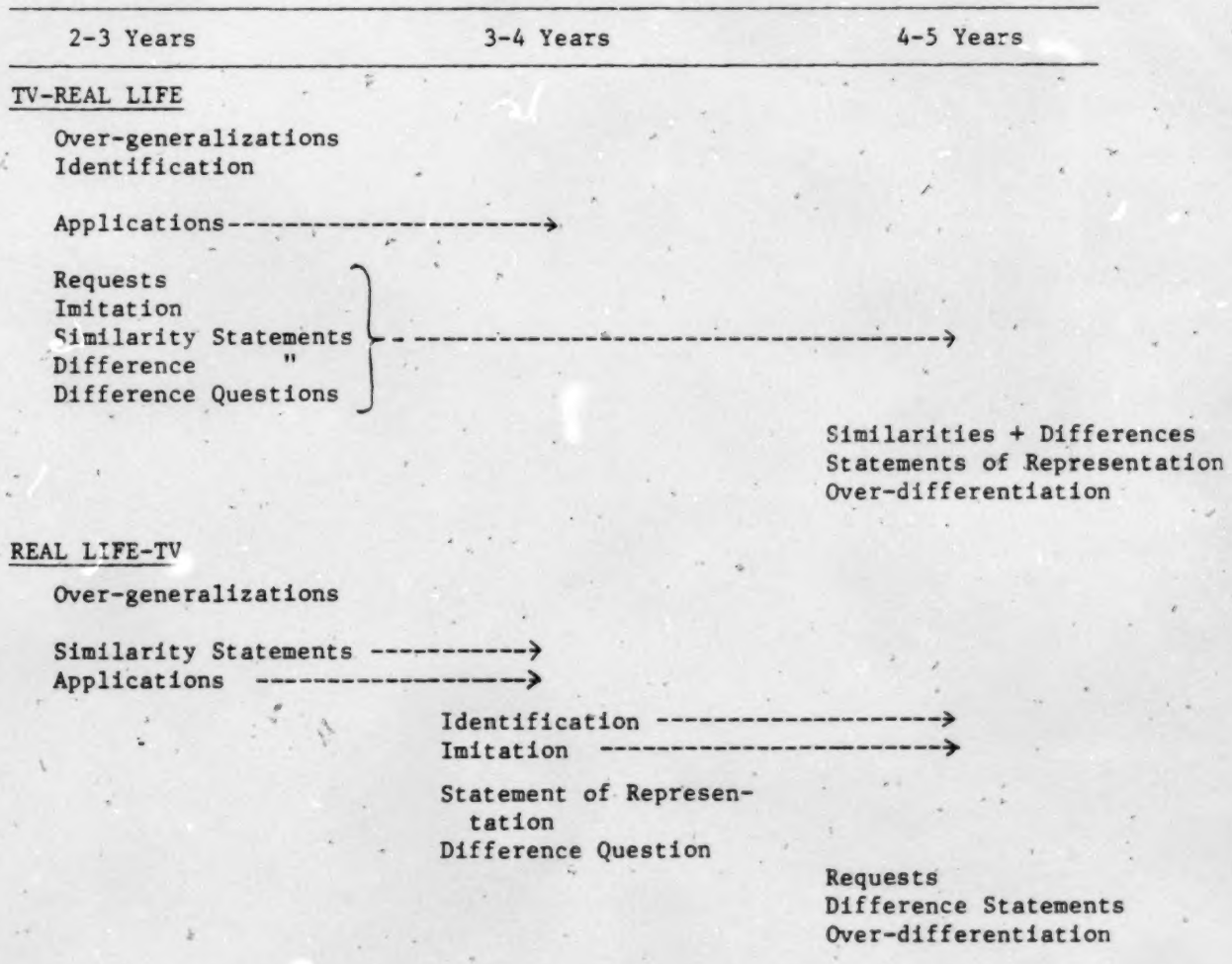
C. Age 4 Years to 5 Years

1. TV-RL Associations. All associations which emerged at age 2:0 continued through this period except for Over-generalization and Application. In addition, children between the ages of 4:0 and 4:11 made the majority of their Statements of Representation, all their statements regarding Similarities and Differences, and all their statements indicating Over-differentiation between the two worlds.

2. RL-TV Associations. Although children requested televised objects at age 2:0 within the television viewing context, they did not do so without the television as stimulus until age 4:0. Statements regarding Differences between real life and television content were not made until this period, and it was also not until age 4:0 that statements implying Over-differentiation were made.

Summary

Thus, the association types clustered as follows during the three-year period:



Discussion

This study has revealed complex patterns in the development of children's understanding of the relationship between television and the real world. It must be borne in mind that the results are based on a small sample of children and that the comments made by the children occurred in a number of different situations (spontaneously and in response to parents' and the experimenter's questions). Nonetheless, clear patterns and relationships have emerged, and these provide insights into the child's changing understanding of the relationship between television and real life.

To begin with, certain general trends characterize our findings. TV-RL associations emerge consistently earlier than RL-TV associations. This result is understandable because for TV-RL associations, the stimulus for the association is immediately present, while for RL-TV associations, the television material must be internalized and the child must have a mental representation of it. Second, children are more concerned with comparing television to the real world than with comparing their daily experiences to television content. This result also makes sense initially, but it is instructive in that, even with the accumulation of many viewing hours, daily experience remains the reference point for determining the status of television content. Television does not acquire such a dominant position that daily experience begins to be sorted in terms of its relation to television content.

Understanding of the relationship between the two realms does not develop in a direct, sequential manner. Certain types of associations seem to be made by children regardless of age, and are termed here "a-developmental". Other types cluster between age two and three, between three and four, or arise only at age four years. These latter groups, marked by times of onset and offset, may be considered indicators of developmental change.

The present discussion will first examine the a-developmental group. Next it will examine each of the three years studied in terms of the child's perceptions and abilities at each age. Due to the fact that the patterns for TV-RL and RL-TV Associations differ, they will be discussed separately.

Developmental Associations

A. TV-RL Associations. Even at the earliest stage, children have an agenda for watching television. At a very young age they begin to compare what they view on television to the real world and continue doing so through their fifth year. At the age of 2, children are already aware that correspondence exists between the two realms, that the boundary between them is permeable at times, that objects seen on television may be obtained in the real world, and that characters may be imitated. In addition, children notice instances marked by a lack of correspondence between television content and real life experience. There are times when the boundary is impermeable and when television content may exist in a different form in the real world, or may not exist at all. Throughout the years from age 2 to 5, children make requests for televised objects, imitate characters, state similarities and differences between the two realms, and are sufficiently concerned with the relationship to ask questions about it.

We see, then, in the child's encounters with television, an active and continuing effort to sort out the various contents and to relate them to information known in the "real world." In Piaget's terms, there are perpetual efforts at assimilation and accommodation: the child seeks to assimilate televised information to the categories with which he cognizes daily experience, or, alternatively, to accommodate the televised information so that it comports more readily with knowledge gained in real-world experiences. Children's comments outside the television-viewing context do not evolve consistently across all three years. These comments will be discussed within each of the next sections.

Age 2 to 3 Years: Discovery of and Confusion about the Boundary

A. TV-RL Associations. While children honor some sort of boundary between the televised and real worlds, and notice similarities and differences between them, they nonetheless remain confused about the actual relationship between events or objects which exist on the two sides of the boundary. The confusion is apparent in the Over-generalizations made by children of this age. There are times when children indicate a belief that the two spheres are identical, not separate and self-contained. They attempt to act directly upon events occurring within the television set and fear that these events or the characters involved can immediately affect them. The boundary is perceived, at this time, as fully permeable or non-existent. The glass screen and electronic images of the television are overlooked, and the images on the screen are often attributed real-life status.

Between the ages of 2 and 3, children also test out this belief that the two worlds are identical. They assume the roles of television characters and they make statements about wanting to be like them. The child seems to be determining whether he can take on some of the characteristics of television personalities, or whether the boundary between the two worlds is too rigid and the characters totally unreal.

Finally, between the ages of 2 and 3, children also forge connections between the two spheres by importing information from one to the other. They recognize similarities between situations in the two realms and transfer information gained in one realm, across the permeable boundary, to apply it to the other.

In sum, the child between the ages of 2 and 3 is aware of the boundary between these two realms, but is more impressed by its permeability than its impermeability. Although some differences are noticed, children more often comment upon the correspondence between the two worlds. They even perceive parallels and direct relationships which do not actually exist.

B. RL-TV Associations. Outside the television-viewing context, one finds additional evidence that children are primarily concerned with similarities between the two realms. Children often expect any situation or character resembling television content to proceed or behave exactly in real life as it does on television. They apply knowledge gained on television to real life situations and they comment on similarities between the two worlds.

Age 3 to 4 Years: Clarification of the Boundary and the Emergence of Mental Representations

A. TV-RL Associations. Children's TV-RL associations between the ages of 3 and 4 indicate that their perception of the boundary between the two realms has to some extent solidified. By age 3 children have realized that they cannot directly influence events occurring within the television set. Although some fears of television content persist, and may, in certain circumstances even magnify, children have, for the most part, realized that events or characters visible on the television cannot immediately affect them. Over-generalizations fade; the boundary between the two worlds has been formed; the lack of immediate, direct, total correspondence between the two worlds has been recognized.

Identifications fade at age 3 for TV-RL Associations as well. It is unlikely that children stop identifying with and wanting to be like television characters, and in fact, other results contradict this finding. For example, imitations do continue to occur during this year, and in addition, identification with television characters does occur frequently outside the television-viewing context. The decline is apparently an indication that whatever Identification takes place at the time of viewing is now internalized or performed covertly.

B. RL-TV Associations. At age 3, children begin to make statements indicating identification with television personalities, and to imitate television characters outside the television viewing context. They explore the characteristics and the relationships between television and their own lives or personalities. They discover that similarities obtain between the two, that some characteristics may exist or be reproduced on the real life side of the boundary, but that others are fantastic and do not exist across the boundary. A lack of direct stimulus in RL-TV Associations may explain why these types of statements and role-modelling cluster at age 2 for TV-RL Associations, but do not cluster for another year for RL-TV Associations. While watching television, children have the characters in front of them to stimulate their interest and to encourage emulation. Without television, the child must internalize the character roles and personalities in order to emulate their behaviors. Such internalization requires considerable mental representation and seems a more sophisticated function than simply copying behaviors straight off the screen.

Age 4 to 5 Years: Subtleties Emerge -- The Boundary as a Filter

A. TV-RL Associations. At age 4, children begin perceiving subtleties in the relationship between the two worlds. They start to understand some of the ways in which the two worlds actually relate, how the permeable and impermeable parts of the boundary combine as a type of filter, and how content in one realm may have direct influence on or applicability to the corresponding content in the other realm. These more sophisticated perceptions are indicated by the appearance of statements foregrounding both Similarities and Differences and Statements of Representation.

Having reached some understanding that the boundary between the two realms varies in its permeability, that there are parallels, differences, and combinations of the two, a new problem appears to arise for children at age 4. They have developed a rule with which they override this newly acquired understanding: "nothing on television is real", regardless of the extent to which it parallels real life. When pressed, children will sometimes go beyond the rule and admit similarities between the two worlds, but their first response generally adheres to the new rule. The appearance of Over-differentiation at age 4 1/2, indicates two things -- first, that the 4 year old's definition of the word "real" differs from that of an adult; and second, that this definition involves an awareness of a boundary which radically separates television content from mundane perception of reality and the real world.

B. RL-TV Associations. At age 4 the new "overriding rule" is applied outside the television-viewing context as well as within it. Regardless of context, television and real life each maintains its own reality status separate and different from the other.

By age 4, children have internalized the objects viewed on television. By beginning to make requests without the stimulus of the televised object, children demonstrate a secure mental representation of the object and an awareness of that object's availability in the real world.

Four year olds no longer appear to be particularly concerned with the similarities between real-life experiences and television content. They have long since recognized that objects, people, or events experienced in real life have parallels in television content, and until age 4, they have commented upon them. Now, they realize that almost anything in real life may have a television counterpart. Inasmuch as the reality status of real life objects is no longer in question, the fact that they resemble televised objects is no longer particularly interesting or worth discussing, and therefore Statements of Similarity decline. The reality status of television content, on the other hand, is still under investigation: thus Differences between the two worlds, spots of permeability and impermeability in the boundary remain topics of discussion.

Children also no longer overtly apply information gained in one realm to the other. This is surprising as it would seem that once children recognize that knowledge in one realm may be useful in the other, such knowledge would continue to be applied regardless of age. Perhaps children do continue to apply information, but simply no longer verbalize the fact. It will be interesting to determine whether the downward trend continues from age 5 to age 6, or whether a resurgence occurs instead.

TV-RL as Compared to RL-TV Associations: The Figure vs. Ground Issue

Our findings suggest that, children do not concern themselves greatly with the way in which real life experiences compare to televised material. The fact that there were twice as many TV-RL as RL-TV associations partially demonstrates this fact. In addition, there were no Statements of Similarities and Differences and only one Statement of Representation for RL-TV

Associations. The single Statement of Representation which occurred outside the television-viewing context was, in fact, a statement regarding television's representation of the real world, not vice versa. The three Real Life-TV Statements of Differences occurred when the child was not viewing, and thus indicated mental representations of television content, but they were statements which related television to real life, not real life to television. The results confirm therefore that children's real life experience is the reference point against which the figure of television is compared, not vice versa.

Conclusion

This study has provided tentative answers to the several questions examined in this report. To begin with, children investigate the relationship between television and the eal worlds throughout the preschool years. We have seen that as early as age 2, children are very involved with investigating television's relationship to the rest of their experience, and that they are developing an awareness of the existence and the nature of the boundary between these realms. Children consistently explore similarities and differences between the two realms, explore ways in which information may be transferred and applied between the two. They imitate and identify with television characters, make requests for objects they see, and ask for clarifications about the relationships which confuse them. At age 2, they appear quite confused about the nature of the boundary between the two realms. They attempt to act directly upon televised situations and they fear that television characters or events may have immediate, direct access to and influence upon their own lives. By age 4, however, following two years of investigation of the relationship, they indicate a clear understanding of the relationship between television and real life and of the often varying nature of this relationship.

The task of sorting out the enormous amount of television content to which they are exposed is by no means complete; indeed other studies have revealed issues regarding television's reality status with which children have yet to grapple. For example, our subjects in this study show little awareness of varying levels of reality, the contrast between surface reality and underlying psychological reality, the ambiguous reality statuses of characters such as Superheroes, or the concept of stagedness -- the fact that certain content is presented specifically for television, is rehearsed, scripted, and non-spontaneous. Nonetheless, we have established that by age 5, children have developed a method of determining the ways in which various types of material relates to reality and an understanding of how, either directly or indirectly, those materials may affect their own lives.

A number of issues <u>clearly</u> call for further inquiry. It will be important to examine specific types of television programming such as cartoons, situation comedies, educational programs, and determine whether certain types stimulate certain types of associations, whether certain types stimulate more associations than others, or whether the type of fare being viewed has no effect on the associations children make to their real life experience.

The employment of nonverbal measures to get at television-real life associations is also an important and necessary adjunct to the present inquiry. In addition, in order to gain a better understanding of the development of children's perception of the reality statuses of various television characters, one might design an experiment. For instance children can be encouraged to relate actions and characteristics of various television characters to people encountered in real life and the changing nature of these associations with age can be documented. Such a study could provide valuable information as to how television characters affect children's expectations and perceptions of people in their lives, and how their actual experiences with people affect their understanding of and reactions to televised characters.

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Harvard Project Zero is a basic research program at the Harvard Graduate School of Education. Its original charge was to study creation and comprehension in the arts and means toward better art education. A prime objective throughout the Project's history has been to provide a sound theoretical and experimental base for effective education of artists and audiences. The Project began in the fall of 1967 in response to the frank admission that, however much is known about how to educate in science and how to evaluate scientific work, practically nothing is known about the underlying principles of how to teach and evaluate in art. From that challenging "zero" the Project took its name and tasks. Our research methods include rigorous conceptual analysis, investigation of relevant literature, design and execution of key experiments in psychology and other fields, visits to arts education institutions, and application of results to proposing and assessing programs in art education.

Project founder and former director Nelson Goodman's book Languages of Art (Bobbs-Merrill, 1968) has provided important direction in our effort to isolate and investigate basic skills. This work sets forth a "theory of symbols," a broad treatment of elements of communication, embracing words, gestures, diagrams, paintings, poems, musical scores, and so on. Almost all the psychological processes under consideration in our studies of the arts involve extensive operation with and upon symbols of various kinds. These symbols are not merely instruments of communication, but also instruments of cognition, tools in terms of which the mind deals with the perceptual world.

Some of our research has examined the psychological implications of the theoretical models of symbol systems introduced in Languages of Art. For instance, one question is whether different information processing skills are necessary to produce effective art within linguistic, versus nonlinguistic, symbol systems. Another, complementary approach emphasizes problem solving and search strategies in the moment-to-moment perception and production of a work of art. How do subjects search for rhyme words in poetry or explore alternative placements of pieces in collage? A favorite means of developing and testing new models is through the study of errors. By using impoverished or ambiguous stimuli, assigning tasks somewhat too difficult for a subject, or working with brain-damaged subjects, one can elicit patterns of error-making which suggest hypotheses and select between alternative models of a process. These approaches characterize many of the Project's investigations mentioned below in a list of Project members and their particular interests.

Though the development of actual curricula in arts education is not a primary concern, the Project does contribute to the field of practical education. Project members have responded to inquiries and requests to comment on curricula from teachers in the field. Establishment of Harvard Summer School's Institute in Arts Administration resulted from the Project's reply to an inquiry from the director of the Harvard Summer School, and members of the Project staff cooperated in planning the Institute, in preparing material, and in the actual teaching. Consideration consultation has been provided to schools, museums, television, and a variety of arts institutions by members of the Project.

The Project has also sponsored a series of lecture-performances in various media, designed to give the general public and prospective public school teachers and administrators better insight into and attitudes towards artists and the arts. As the series title "Art in the Making" suggests, the purpose of the lecture-demonstrations was to reveal something of the artist's way of working, rather than to display his products. In the presence of an audience free to ask questions, each artist explored alternatives, exposed some constraints of his medium, compared his various efforts, and searched for the right effect, choice by choice.

While maintaining a major concern with the arts and art education, the Project, under its current co-directors, has considerably broadened its field of inquiry and now investigates a whole range of topics in the area of cognitive psychology. One part of the Project has focussed particularly on developmental studies. Among the topics currently being investigated are the emergence of symbolic capacities during the first years of life; the development of literary abilities, specifically the capacity to produce and appreciate metaphors and stories; children's understandings of the various worlds presented on television; the emergence of drawing skills; and the breakdown of various symbol using capacities under various forms of brain damage. The other part of the Project has concentrated on studies in the areas of cognitive and perceptual psychology, ones which utilize both normal adult subjects and gifted artists. Among the topics investigated recently have been critical judgment and the sources of critical disagreement in adults; the thought processes of professional and amateur poets and painters in developing works; the role of geometric principles in visual perception and picture perception particularly; reasoning about everyday matters and the logical difficulties people encounter.

A list of recent papers which can be purchased from the Project is available upon request.